DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

Government-Owned Inventions; Availability for Licensing

AGENCY: National Institutes of Health, HHS

ACTION: Notice

SUMMARY: The inventions listed below are owned by an agency of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 209 and 37 CFR Part 404 to achieve expeditious commercialization of results of federally-funded research and development. Foreign patent applications are filed on selected inventions to extend market coverage for companies and may also be available for licensing.

FOR FURTHER INFORMATION: Licensing information and copies of the U.S. patent applications listed below may be obtained by writing to the indicated licensing contact at the Office of Technology Transfer, National Institutes of Health, 6011 Executive Boulevard, Suite 325, Rockville, Maryland 20852-3804; telephone: 301-496-7057; fax: 301-402-0220. A signed Confidential Disclosure Agreement will be required to receive copies of the patent applications.
Use of Cysteamine to Treat Metastatic Cancer

**Description of Technology:** Cysteamine is an aminothiol and anti-oxidant that has potential for the treatment of radiation sickness, neurological disorders and cancer. Cysteamine has FDA approval for use in humans, and produces few side-effects as a natural degradation product of an essential amino acid. It is mostly used for treatment of cystinosis. The inventors on this technology have demonstrated that cysteamine also suppresses the activity of matrix metalloproteinases (MMPs). Because MMPs have been implicated in tumor invasion and metastasis, cysteamine has potential as an effective therapeutic for metastatic cancer. Administration of cysteamine was able to reduce invasion and metastasis in mouse xenograft tumor models and prolong survival of the mice without significant adverse side effects. This suggests that cysteamine could represent a novel therapeutic agent for treatment of metastatic cancer.

**Potential Commercial Applications:** Therapeutic for metastatic cancer as monotherapy or combined with other drugs.

**Competitive Advantages:**

- Cysteamine does not produce adverse side-effects when administered to humans.
- Cysteamine has already been approved for use in humans, providing a clearer path to clinical approval.

**Development Stage:**

- Pre-clinical
- In vitro data available
• In vivo data available (animal)

**Inventors:** Raj K. Puri and Bharat Joshi (CBER/FDA)


**Intellectual Property:** HHS Reference No. E-219-2013/0 –

- US Provisional Application No. 61/814,010
- Canadian Application No. 2813514
- Australian Application No. 2013205350
- Korean Application No. 10-2013-43713

**Licensing Contact:** David A. Lambertson, Ph.D.; 301-435-4632; lambertsond@mail.nih.gov

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**Encircling Suture Delivery System**

**Description of Technology:** The invention provides a novel delivery system for delivering an encircling suture which includes two separate hollow limbs held together at an articulation by the suture to be delivered. The suture can extend through the hollow limbs, which slide along the suture. The distal ends of the limbs can be compressed into a desired delivery shape that allows the limbs to be advanced through the lumen of a delivery catheter (e.g., a transcutaneous, transvascular or intraluminal catheter) into any body cavity. As the distal portions of the limbs move out of the delivery catheter, the limbs cooperatively assume a loop shape complementary to the shape of the target around the encircling suture to leave only the suture in the desired delivery position while
maintaining desired suture tension and position. The delivery device can be placed around a variety of anatomical structures (e.g., heart, arterial appendage, cecal appendix, gall bladder, neoplasm, uterus, hemorrhoid, uvula, aneurysm, transected blood vessel, folded or looped lumen, intraocular crystalline lens or implanted intraocular lens or haptic, urinary bladder, kidney, prostate, intestine, or liver, etc.).

**Potential Commercial Applications:**

• Surgery

• Suturing

• Catheterization

• Cardiac valve repair

**Competitive Advantages:**

• Formable suturing

• Circumferential suturing

• Flexible

• Easy to use

**Development Stage:** Prototype

**Inventors:** Toby Rogers, Robert Lederman, Merdim Sonmez, Dominique Franson, Ozgur Kocaturk (all of NHLBI)


**Related Technologies:**

• HHS Reference No. E-027-2013/0 – Devices and Methods for Treating Functional Tricuspid Valve Regurgitation
Peptide Inhibitors of Polo-like Kinase 1 (PLK1) Useful as Anti-cancer Therapeutics

Description of Technology: PLK1 is being studied as a target for cancer drugs. Many colon and lung cancers are caused by KRAS mutations. These cancers are dependent on PLK1. Inhibition of PLK1 allows for selective killing of cancer cells without harm to normal cells. The peptide derivatives available for licensing have achieved both good efficacy and enhanced bioavailability.

Potential Commercial Applications: Development of selective cancer therapeutics.

Competitive Advantages: Enhanced bioavailability and higher binding efficacy over existing peptide PLK1 ligands.

Development Stage: Early-stage.

Inventors: Terrence R. Burke, Fa Liu, Wen-Jian Qian, Jung-Eun Park, Kyung S. Lee (all of NCI)

Publications:


**Licensing Contact:** Patrick McCue, Ph.D.; 301-435-5560; mccuepat@mail.nih.gov
Polymeric Silicone Hydrogel Vessel Mimetics for Cell Culturing

**Description of Technology:** The invention pertains to high oxygen diffusivity silicone hydrogel support structures that mimic tissue vasculature (e.g., capillary bed). Photolithographic methods are used to construct mimetic silicone hydrogel pillars that have, for example, a 20:1 height to diameter ratio. Advantageously, these mimetic silicone hydrogels diffuse oxygen from the bottom chamber to the cells cultured on the surface at near physiological rates (60 times that of water). Uses of these mimetics include 2-D screening for chemotherapeutic compounds and growth of tissue for grafting.

**Potential Commercial Applications:**

- Tissue engineering
- Simulation of physiological growth conditions

**Competitive Advantages:** High oxygen diffusivity

**Development Stage:**

- Prototype
- Pilot
- In vitro data available

**Inventors:** Chandan Das (NCI), Ashley Jaeger (CIT), Thomas Pohida (CIT), Randall Pursley (CIT), Philip McQueen (CIT), Nicole Morgan (NIBIB), Michael Gottesman (NCI)

**Intellectual Property:**

Co-Transcriptional Assembly of Modified RNA Nanoparticles

**Description of Technology:** A method is provided for generating RNA nanoparticles having modified nucleotides and/or having increased nuclease resistance where the RNA nanoparticles are formed co-transcriptionally by T7 RNA polymerase in the presence of manganese ions.

**Potential Commercial Applications:** Inexpensive and efficient method of producing chemically modified RNA nanoparticles for diagnostic or therapeutic applications.

**Competitive Advantages:**

- Overcomes the cost and size limitations of solid-phase RNA synthesis.
- Allows complexity of RNA nanoparticles production.
- Increases retention time of RNA nanoparticles.

**Development Stage:**

- Early-stage
- In vitro data available

**Inventors:** Bruce A. Shapiro (NCI), Kirill Afonin (NCI), Maria Kireeva (NCI), Mikhail Kashlev (NCI), Luc Jaeger (Univ California, Santa Barbara), Wade Grabow (Univ California, Santa Barbara)
Publications:


Related Technologies:

• HHS Reference No. E-038-2012/0 – International Application No. PCT/US2012/065932

• HHS Reference No. E-039-2012/0 – International Application No. PCT/US2012/065945

**Licensing Contact:** John Stansberry; 301-435-5236; stansbej@mail.nih.gov

**Collaborative Research Opportunity:** The NCI Center for Cancer Research Nanobiology is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate or commercialize diagnostic or therapeutic RNA nanoparticles. For collaboration opportunities, please contact John Hewes, Ph.D. at hewesj@mail.nih.gov.

July 12, 2013
Date

Richard U. Rodriguez,
Director
Division of Technology Development and Transfer
Office of Technology Transfer
National Institutes of Health

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